DLLRF controller for superconducting third harmonic cavity by developed at SSRF

Wednesday, October 25, 2023 4:28 PM (4 minutes)

The superconducting third harmonic cavity which has developed in Shanghai Synchrotron Radiation Facility (SSRF) has passed tests. A digital low level radio frequency (DLLRF) controller has been developed and achieved the goal of stretching beam cluster and improving beam life. The controller based on a Field-Programmable Gate Array (FPGA) board and a front-end board which adjust the stepper motor and piezoelectric ceramic. When the state is in top-up mode over 120mA, the amplitude stability has improved form $\pm 5\%$ with open loop to less than $\pm 1\%$ with close loop, the voltage of piezo has varies smoothly and stably within 120V, and the beam life has improved more than doubled.

Keyword

Primary authors: ZHANG, Zhigang; Mr ZHAO, Yubin; HUANG, Xuefang (Shanghai Advanced Research Institude, Chinese Academy of Saiences); ZHENG, Xiang (Shanghai advanced research institute. CAS); Mr WANG, Yan (Shanghai Advanced Research Institute); XU, Kai (Shanghai Advanced Research Institute, Chinese Academy of Sciences); HOU, Hongtao (Shanghai Advanced Research Institute, Chinese Academy of Sciences)

Session Classification: Posters

Track Classification: Software